

**Purpose** Created by Derry and colleagues [1], the 11-item FLEP scale is designed to aid clinicians in distinguishing frontal lobe seizures from parasomnias. While polysomnography is considered the gold standard approach for differentiating the two conditions, scale developers cite the need for an efficient, cost-effective alternative for those who, for whatever reason, do not have access to sleep clinic facilities. In order to distinguish nocturnal events caused by epilepsy from those related to parasomnias, the scale queries several factors, including: age of onset and event duration, frequency, timing, symptoms, stereotypy, and recall.

**Population for Testing** The scale was initially validated in a population of patients referred to a sleep clinic experiencing nocturnal events of uncertain cause. Participant ages depended significantly on which condition group they belonged to: nocturnal frontal lobe epilepsy patients had a mean age of 27.9, the NREM arousal parasomnia group had a mean age of 13.2 years, and the REM behavior disorder group had a mean age of 69.1 years.

**Administration** The FLEP scale consists of a semi-structured interview to be conducted by a trained administrator. It requires approximately 10 min for completion.

**Reliability and Validity** In a psychometric evaluation of the scale, Derry and colleagues [1] found that the FLEP possessed an interrater reliability of .97, a sensitivity of 1.00, a specificity ranging from .90 to .93, a positive predictive

value ranging from .91 to .94, and a negative predictive value of 1.00. A follow-up evaluation found slightly less promising results [2], indicating a sensitivity of .71, a specificity of 1.00, a positive predictive value of 1.00, and a negative predictive value of .91. In nocturnal frontal lobe epilepsy patients, the scale gave an incorrect diagnosis 28.5% of the time.

**Obtaining a Copy** An example of the scale's items can be found in the original article published by developers [1].

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**Scoring** Most questions require only a “yes” or “no” answer, though a few ask specifically for estimates of duration or frequency. For each item, responses are classified as either indicating epilepsy (these receive either +1 or +2), indicating parasomnia (these receive either -1 or -2), or neutral (a score of 0). Total scores are then calculated. Developers suggest that individuals with scores greater than +3 are very likely to have epilepsy, while those with scores of 0 or less are very unlikely to have epilepsy. However, these boundaries have been called into question by other research suggesting that they provide misleading results [2].

## The Frontal Lobe Epilepsy and Parasomnias (FLEP) Scale

Clinical Feature		Score
Age at onset		
At what age did the patient have their first clinical event?	<55 y	0
	≥55 y	-1
Duration		
What is the duration of a typical event?	<2 min	+1
	2-10 min	0
	>10 min	-2
Clustering		
What is the typical number of events to occur in a single night?	1 or 2	0
	3-5	+1
	>5	+2
Timing		
At what time of night do the events most commonly occur?	Within 30 min of sleep onset	+1
	Other times (including if no clear pattern identified)	0
Symptoms		
Are the events associated with a definite aura?	Yes	+2
	No	0
Does the patient ever wander outside the bedroom during the events?	Yes	-2
	No (or uncertain)	0
Does the patient perform complex, directed behaviors (eg, picking up objects, dressing) during events?	Yes	-2
	No (or uncertain)	0
Is there a clear history of prominent dystonic posturing, tonic limb extension, or cramping during events?	Yes	+1
	No (or uncertain)	0
Stereotypy		
Are the events highly stereotyped or variable in nature?	Highly stereotyped	+1
	Some variability/uncertain	0
	Highly variable	-1
Recall		
Does the patient recall the events?	Yes, lucid recall	+1
	No or vague recollection only	0
Vocalization		
Does the patient speak during the events and, if so, is there subsequent recollection of this speech?	No	0
	Yes, sounds only or single words	0
	Yes, coherent speech with incomplete or no recall	-2
	Yes, coherent speech with recall	+2
Total score		

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## References

1. Derry, C. P., Davey, M., Johns, M., Kron, K., Glencross, D., Marini, C., Scheffer, I. E., & Berkovic, S. F. (2006). Distinguishing sleep disorders from seizures: diagnosing bumps in the night. *Archives of Neurology*, 63(5), 705-709.
2. Manni, R., Terzaghi, M., & Repetto, A. (2008). The FLEP scale in diagnosing nocturnal frontal lobe

epilepsy, NREM and REM parasomnias: data from a tertiary sleep and epilepsy unit. *Epilepsia*, 49(9), 1581-1585.

## Representative Studies Using Scale

None.